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Gods and Monsters in *Splice*, *Prometheus*, and Our Genetic Imaginary: A Gene-centric Evolution of the *Frankenstein* Script in Science Fiction Cinema

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An abstract of
A thesis submitted to the Faculty of the
James T. Laney School of Graduate Studies of Emory University
In partial fulfillment of the requirements for the degree of
Master of Arts
In Film and Media Studies
2014

Abstract

Gods and Monsters in *Splice*, *Prometheus*, and Our Genetic Imaginary: A Gene-centric Evolution of the *Frankenstein* Script in Science Fiction Cinema
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This thesis identifies manifestations of the *genetic imaginary* throughout Vincenzo Natali's *Splice* (2009) and Ridley Scott's *Prometheus* (2012), with regard to their releases as coinciding with the close of a thirty-odd-year timeline characterized by progressive legislation over gene-centric science, and instigated by publication of the first genetics and bioengineering periodical. I borrow from and develop Jackie Stacey's methodology in *The Cinematic Life of the Gene*, wherein she identifies "the decade of the clone": a nine-year glut of milestone advances in cloning science. Advancing Stacey's model, I draw a pivotal distinction between circulation of genetic imaginary discourse via hard copy media, and mass dissemination of the same, via personal digital platforms such as massively capable smartphone and tablet devices.

I distinguish the iconic DNA double helix as the memetic component that most enabled gene-centric discourse to permeate digital graphical media and, subsequently, popular cultural discourse at-large. Deference to basic memetic theory confirms how the advent of massively capable smartphone devices was a second, catalyzing prerequisite in this process. I survey the double helix icon as a floating signifier, focusing primarily on its implementation in recent science fiction films of transgenic creation, as well as the filmic motifs surrounding it.

Specifically, these include the ongoing growth, or mutation, of novel transgenic creations; extreme iterations of the 'mad' or overreaching scientist archetype; a verbal language barrier between creator and created (no matter the intellectual potential); and the endurance of aberrant transgenic genomes. This grouping of elements illustrates, onscreen, a populist wariness of gene-centric potentialities, and dictates a number of hypothetical concerns, all of which stem markedly from the fact that an entirely novel mode of coexistence accompanies the bioengineering of transgenic organisms.

In reflecting gene-centric cultural discourse, this combination of motifs coincidentally outlines the guiding script and mythology of the Greek Titan Prometheus. I explore how this marks a departure from the script most common to sci-fi narratives of creation, Mary Shelley's *Frankenstein*, and endeavor to discern what this recurring deviation indicates about the effects of the contemporary configuration of the genetic imaginary on the ways in which we conceptualize and tell stories.

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Table of Contents

Introduction

In this thesis I explore Vincenzo Natali's *Splice* (2009) and Ridley Scott's *Prometheus* (2012) as demonstrative of a socio-intellectual trend that has begun to manifest in science fiction films featuring genetic engineering. I define this distinction based on what it entails for both the graphical vernacular and narratological treatment surrounding 'genes' onscreen, including themes, tropes, and guiding mythologies. Specifically, these two works deal intimately with *transgenic* cloning (genetic engineering techniques which comprise the introduction of genes into non-native species), thereby reflecting, I argue, a recent upsurge in the visibility of neo-Darwinian theory and gene-centric philosophies across popular cultural discourse. Evolutionary biologist Richard Dawkins's *meme theory* suggests how, in this scenario, a hard science such as Genetics has aroused popular curiosity in recent years—a phenomenon known as our *genetic imaginary*—to such an extent that filmmakers took notice, producing two films that adhere closely to modern gene-centric precepts.

Splice and *Prometheus* constitute a sample of cloning films from the turn of the millennium's first decade. This was an important period for the public advancement of popular topics in genetics: hosting the establishment of embryonic stem cell lines and the completion of the Human Genome Project, in 1998 and 2000, respectively, while conversely reeling from the death of a young gene therapy patient in 1999 and the federal defunding of stem cell research in 2001. The tone of progress took a positive turn in 2010, when a United States district court voided previously issued patents on genes and, the following year, the D.C. Court of Appeals lifted an injunction that had been barring federal funding of stem cell research

These two films are thusly products of a cultural climate characterized in large part by progressive legislation over gene-centric science, a period which I outline: starting with the publication of the first genetics and bioengineering trade periodical in 1981, and emphasizing the release of Apple's iPhone, in 2007, as marking the beginning of a re-standardization of our capabilities to access and disseminate information. While the development of these iOS-based smartphones, and the Android devices to follow, marked a radical development in consumer information technology capacities, this thesis suggests that such devices are more aptly thought of as vehicles enabling the evolution of a branch of hyper-social culture-sharing practices, which were first initiated by the Internet. Though innumerable spheres of mobile content continue to flourish and circulate as a consequence, gene-centric perspectives on our evolutionary history and meme-centric models of culture making are ostensibly dominant. I base this claim, reading the assorted ways in which they manifest in the processes surrounding both recent film form and production. Articulation of this phenomenon constitutes Chapter One.

In Chapters Two and Three, analyses of *Splice* and *Prometheus*, respectively, illuminate a particular combination of tropes that is common to both films and reflects this heightened populist cognizance of modern genetic science and its practical applications. This grouping of filmic components illustrates an ideological preoccupation with contemporary neo-Darwinian paradigms, manifesting onscreen as an array of hypothetical concerns, all of which stem markedly from the fact that an entirely novel mode of coexistence accompanies the creation of novel, bioengineered organisms. This modal shift is inescapable. The aspirations, anxieties, and hypotheses that result from a focus on such concerns—in film as well as society—constitute a prominent facet of our

genetic imaginary, a concept deserving due diligence in any extra-scientific invocation of genes, genomics, or cloning.

The Genetic Imaginary

I speak not of what the Doctor really did, or said he did, but, as more to my purpose, of what was then spoken of as having been done by him.

- Mary Shelley, on Erasmus Darwin

Sarah Franklin first named a "genetic imaginary" in 2000, in her chapter in *Global Nature, Global Culture*.[1] Her coining of the term contextualizes the genetic imaginary as an abstract product of New Genetics, a term referring to medicine and research generated through scholarship on the role of the gene in health and disease. Franklin suggests "a realm of imagining the future, and reimagining the borders of the real"—a realm "dense with the possibility of both salvation and catastrophe."[2] Her language construes an arena of cosmic chaos charged between positive and negative extremes: salvation and catastrophe hanging in the balance. At the same time, this is a fitting description of the films explored in this thesis, which primarily render this imaginary realm thematically, as humankind impinging upon some god's once-exclusive ability to create, and grant sentient life.

Subsequent uptake of a genetic imaginary concept features in Neil Gerlach's 2004 text, *The Genetic Imaginary: DNA in the Canadian Criminal Justice System*, and I take it to be more concise considerations of the concept—like Gerlach's, summarized here—that have most benefited its dissemination: "A set of social concepts for thinking and

[1] Sarah Franklin, "Life Itself: Global Nature and the Genetic Imaginary," in *Global Nature, Global Culture* (Thousand Oaks: Sage Publications, 2000), 198.
[2] Ibid., 198.

speaking about the civilization of the gene and its future direction."[3] Gerlach sees the genetic imaginary as a widespread social phenomenon, generated and maintained by populist speculation on what genes, genetics, and bioengineering all becoming quotidian, might hold for criminal justice systems.

As evidenced early by these two dissimilar fields of research in which it first figured, the concept of a genetic imaginary is still nascent and malleable, available and amenable to innumerable spheres of human interest. There are several factors making a gene-centric worldview of the biosphere enticing, but I am primarily concerned with the one delineated by Suzanne Anker and Dorothy Nelkin—its "visualizable" presence throughout public media: the double helical model of DNA.[4]

The DNA Double Helix

Extensive scholarship has been done on the iconographic status of the DNA double helix in popular discourse. Jackie Stacey offers a concise summary of the topic in her 2010 book, *The Cinematic Life of the Gene*: "[The double helix] has come to have a ubiquitous presence in contemporary culture as a sign of vitality, immortality, and the future."[5] Effectively, the double helix icon is a Physical Sciences catchall: used to interpret or represent the chemical and biological foundation of the human body, its phenomenal evolutionary development, and humankind's abilities to tinker with both. These diffuse and nonspecific relationships of signification suggest how the double helical model might be said to function, in terms of semiotic signification—though even

[3] Neil Gerlach, *The Genetic Imaginary: DNA in the Canadian Criminal Justice System* (Toronto: University of Toronto Press, 2004), 5.
[4] Suzanne Anker and Dorothy Nelkin, *The Molecular Gaze: Art in the Genetic Age* (Woodbury: Cold Spring Harbor Laboratory Press, 2004), 2.
[5] Jackie Stacey, *The Cinematic Life of the Gene* (Durham: Duke University Press, 2010), 5.

within the familiar framework of Semiotics, it is a peculiar example of a sign, due to the influence of our genetic imaginary on processes of signification.

Outside of molecular biology and chemistry, instances of the exploited double helix are just as likely to mean nothing as they are to mean everything, a caveat equating the biochemical spiral model with nonrepresentational concepts. For Claude Lévi-Strauss, indeterminate signs such as the double helix are "floating signifiers," attributable to a "*void* of meaning and thus apt to receive any meaning."[6] In these instances, the sign is symbolic: having no discernible relationship with the signified. This definition of implementation is applicable on occasions when an audience of the double helix icon does not attempt to consider its scientific denotations (most likely due to ignorance of them), and so the genetic imaginary—in whatever form—fills the void of signification. Perception of a signifier as 'floating' is essentially a reaction to nothingness; in this case, the process entails the genetic imaginary compensating for a lack of denotative understanding by offering counsel for understanding of the double helix.

In other scenarios, when an interpretant is familiar with the double helix sign as an iconic, genetic model, it is aligned more closely with postmodern conceptions of the floating signifier. In contrast to those of Lévi-Strauss, these characterize floating signification as abundant and highly variable. In this case as well as the prior, the genetic imaginary ultimately renders an excess of meaning to be interpreted from the double helix sign. Where there is room for a signified due to a lack, it provides, and where there is iconic signification already, it provides further. The genetic imaginary complicates processes of signification that are based on the double helix floating signifier in these

[6] Claude Lévi-Strauss, *Introduction to the Work of Marcel Mauss,* trans. Felicity Baker (London: Routledge & Kegan Paul Ltd., 1987), 18.

ways. I raise the point here to confirm that methodical interpretation of the graphic's implementation in any given scene is essential to identifying where our genetic imaginary has come to inflect sci-fi cinema with the same gene-centric cultural preoccupations that constitute it.

Gene-centrism Onscreen

The double helix icon is unavoidable, by far the most familiar intimation of genes afoot. In each film, I focus on at least one scene featuring this depiction of DNA, but do not count it as one of the four exceptional motifs that set these transgenic cloning films apart. Firstly, though, I focus on an even more explicit plot element. The most obvious consequence of hosting transgenically engineered organisms is their unpredictable and ongoing growth, or mutation (notorious behavior for genes as well). In any scenario, real or imagined, this is a logically inevitable consequence of the creation and maintenance of a hybrid life form: the corresponding creation and maintenance of its hybrid lifecycle. The biological horrors of the *Prometheus* universe and Dren, the focal specimen in *Splice*, provide robust examples of the highly variable potential for such bioengineered organisms to grow and evolve beyond control.

The supporting embodiment of this concept and the second trope on which I focus, are the overreaching scientist characters. In each film, the unforeseen yet ultimately undesirable consequences of their experiments are a reflection of their own inadequacies as scientists and—speaking in terms of thematic extrapolation—as humans, impinging upon the classically supernatural ability to create life. Culpability lies with the creators in these transgenic cloning films: the characters who are, in a word, strikingly

unscientific. Illogical and reckless conduct is not a new act for the Mad Scientist archetype, but the following instances are caricatures even in comparison to the norm: brazen and vocal regarding what audiences recognize as their debilitating biases. The fact that these scientist characters' dialogues, with the creation (in *Splice*) and the creator (in *Prometheus*), go unreciprocated constitutes another recurring element of these transgenic cloning films.

The third trope I explore concerns this communication barrier between creator and created, which proves to be a recurring model for the various forms of non-verbal communion exhibited in each film. With the ungainly term *non-verbal communion*, I seek to encapsulate the following relationship: creator and created characters spend considerable time coexisting—cohabiting, in the case of *Splice*—and interacting with one another, yet do not share a mutually-intelligible language. This is striking in each instance, as each party is hell-bent on communicating with the other. There is a certain affect to enduring such language barriers, but the device is more remarkably provocative when one undertakes to identify what genetic imaginary curiosities and anxieties motivate its implementation in these science fictional contexts. Existing scholarship on the iconography of gene-centrism encourages such readings, and I follow suit herein, qualifying these nonverbal scenarios as exemplary of the lay public's lacking vernacular for expressing anxieties about the potential applications and results of genetic engineering.

In the end, both *Splice* and *Prometheus* reinforce the durability of bioengineered genomes. This shared concluding contemplation is complex. On one hand, society pragmatically values healthy genes and the survivability of genomes. On the other, an

ineradicable specimen—particularly of a mutagenic and overwhelmingly powerful nature—constitutes a well-documented anxiety of our genetic imaginary.[7] Though the creators in *Splice* and *Prometheus* pursue opportunities to eradicate what have proved regrettable creations, their efforts prove insufficient; the fourth common component of these transgenic cloning films is, thus, the persistence of aberrant genomes.

As briefly mentioned, I do not consider the double helix an exceptional device, deserving of consideration as a fifth motif. Rather, in Chapter One, I consider this graphical facet of the genetic imaginary in terms of biologist Richard Dawkins's meme theory, which conceptualizes the transmission of culture as analogous to competition among genes in a population. In so doing, I consider smartphone devices and their subscribers—which emerged two years prior to the release of *Splice*—as having primed a cultural climate for a particularly *visible* era for the genetic imaginary: both as a socio-cultural phenomenon and, as I explore herein, the enrichment and differentiation of science fiction cinema.

This thesis identifies a congruency in the narratological tendencies of two recent cloning films, distinguishable formally according to a precise combination of tropes. I illuminate the alignment of the intellectual climate that yielded these films using prevailing evolutionary perspectives, and consider the role of digital memetic transmission in the latter's informing of the former. I utilize a conception of the genetic imaginary, throughout.

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[7] In tracing a history of popular images of genetics, José van Dijck divides the process of what she calls "imagenation" into stages. Of these, the social consciousness of the American Seventies was notable for its concern with environmental safety, prompted by fears of recombinant DNA's potential to "escape" and harm the environment. (José van Dijck, *Imagenation* [New York: New York University Press, 1998].)

In Chapter One, I highlight the intellectual climate surrounding the production of *Splice* and *Prometheus*, beginning with a history of the DNA double helix's circulation across assorted media that offered to keep the general public roughly apprised of the roles which practical genetic and genomic research were projected to play in their lives. Thirty years later, smartphone devices today provide access to the same types of content, in the blink of an eye; and the effects on dissemination of the already globally-recognized double helix icon and accompanying genetic imaginary have been overwhelming. Transitioning into the film analyses of Chapters Two and Three, I entertain Scott's eponymous suggestion that these two transgenic cloning films are markedly *Promethean*, in the style of the Greek myth, according to two diegetic conditions: biogenesis via manipulation of a *particulate* matter, and a *theistic* creator-created relationship. I point to these distinctions because they represent narrative elements characteristic of the "Prometheus" myth, but absent from the script of the original sci-fi narrative of creation: Mary Shelley's *Frankenstein: Or, the Modern Prometheus*, originally published in 1818.

In Chapter Two, I contribute a reading of *Splice* which is articulated with respect to the aforementioned combination of tropes. It should not be presumed that these similarities collapse perception of the marked differences between these films; *Splice*, for example, is distinctive within this established framework due to its focus on the arrangements of nuclear family and sexual congress that accompany coexistence with a novel transgenic organism. In Chapter Three, I outline the same neo-Darwinian orientation in *Prometheus*, according to the same combination of tropes. This more recent film instead emphasizes issues with language in our genetic imaginary, having them play pivotal roles in the (mis)communications between creator and created. In starkest contrast

to *Splice*, *Prometheus* sustains a subtext of spirituality, which elevates the moral quandaries of granting life to intelligent organisms, to a level of cosmic consequence. In concluding, I conduct a brief memetic case study of select discourses surrounding the *Prometheus* property—including its franchise affiliations and advertising partnerships—highlighting an abundance of memetic mechanisms. Finally, I look at two recent "*Frankenstein*" films, released since the initial undertaking of this project, to evaluate what bearing their narratives might have on the claims herein, and briefly point to two recent films that are beyond the sci-fi genre, yet still prominently feature montage sequences of gene-centric biogenesis and Evolution on Earth.

Chapter One:
On Cultural Descent

The following chapters articulate how *Splice* and *Prometheus* are marked, by their disciplined adherence to the gene-centrism of contemporary biological paradigms. Though their demonstrations of this are not firstly graphical, they are always closely motivated by imagery. In *Splice*, laboratory researchers use double helical graphics as a visual aide, allowing them to simplify and glamorize complex structures and processes, and gloss technical minutiae. The *Prometheus* prologue scene aggrandizes the spiral structure a step further, installing re-combinable genetic material as the vehicle of humankind's evolution—the creation myth to end all creation myths. This is a lofty byproduct of gene-centric science to consider, but *Splice* and *Prometheus* are evidence of the ways in which widespread neo-Darwinian paradigms might continue to shape our stories—including the rewriting of mythologies—particularly as they pertain to human identity in the cosmos.

Throughout the subsequent chapters, I suggest a particular socio-intellectual climate, intimately related to concerted onscreen implementation of the double helix icon and gene-centric thinking. My primary interest is the films themselves and what they indicate about creative manifestations of our genetic imaginary, but the double helix and neo-Darwinian gene have gained purchase in populist discourse, independently of film. The trajectory of their gradual rise to prominence throughout the nearly three decades preceding the release of *Splice* makes unsurprising that the two began to manifest so markedly in science fiction films in the late Aughts.

In this first chapter, I explore how and why the double helix icon has, over the past few years in particular, become a mascot for increasing interest in what gene-centric science is coming to mean for our psychic, biological, and narratological futures. I begin with a hard copy history of the gene: its presence in public print media from 1981 to 2011. Noting a transition from the double helix's historically hard-copy media to digital platforms in 2007, I consider Android- and iOS-powered smartphones the most recent catalyzing link between practical progress in gene-centric bioengineering and popular cultural discourse on the same, for multiple reasons. I understand the advent of such devices to have filled two particular roles of interest here: they became the most significant enabling platforms for rapid dissemination of shared genetic imaginary concerns to massive audiences; and their touchscreen interfaces exemplify the quotidian ways in which we have come to champion icon-based permutations as the fundamental units of organization. Before delving into a reading of *Splice*, I conclude this chapter with a brief memetic case study of *Prometheus*, as exemplary of how the production and promotion of franchised Hollywood blockbusters in particular are meme-driven, cultural processes.

Jackie Stacey and the Decade of the Clone

This broad look at the contemporary inclinations of cultural discourses surrounding the advancement of a particular hard science is a development of Jackie Stacey's methodological parameters in her 2010 text, *The Cinematic Life of the Gene*. In offering a view of genetics in the popular consciousness, from the mid-Nineties through

the mid-Aughts, Stacey suggests "the decade of the clone,"[8] a period she delineates according to several highly publicized advances in the science of cloning.[9] Most notably, the decade of the clone saw production of five times as many cloning films as the previous. For the purposes of Stacey's Gender Studies readings, the directional channels of influence between real-world science and filmic science fiction are implicit.

The film analyses herein are not a radical departure from Stacey's, nor is the methodology dissimilar. However, whereas Stacey identifies our genetic imaginary exclusively in the mise-en-scène of sci-fi films, this author accounts for guiding mythological scripts and themes additionally, with an overall focus on the DNA double helix icon (among other graphical representations of 'the gene').[10] In so doing, I distinguish the double helix as a storied vehicle: responsible for circulating diffuse, gene-centric philosophies and anxieties wherever it is implemented. I explore how this memetic agent, a native of hard science, has come to mean infinitely more beyond empirical contexts, than within them. As the chief graphical component of the genetic imaginary and a transmedia constant, the double helix illuminates intersections of real-world genetics, gene-centric cultural discourse, and sci-fi films featuring transgenic cloning—crucial intersections left undefined in previous works. I continue presently with a timeline that is much like Stacey's annotated decade of the clone, though demarcated primarily by instances of federal legislation over gene-centric science. In lieu of tracing milestone advances based solely on the volume of perceived publicity garnered, I consider democratic legislation, as offering more concrete indications of society's

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[8] Jackie Stacey, *The Cinematic Life*, 11.
[9] The cloning of Dolly the sheep (1996); the establishment of embryonic stem cell lines (1998); the completion of the Human Genome Project (2000); and the first successful cloning of a human embryo (a claim later redacted) (2004). (Ibid., 11-2.)
[10] Ibid., 8.

majority stance on a given concern; for such a majority stance—on gene-centrism, in this context—is effectively what one strives to discern when invoking the genetic imaginary as a utilitarian concept in scholarship.

A History of Hard Copy

An imagery-oriented configuration of the genetic imaginary began halfway through the Twentieth Century, when the general public began a love affair with a particularly enticing morsel, representative of progress in practical molecular biology: the double helical model of DNA. Since Rosalind Franklin's work led James Watson and Francis Crick to its deduction in 1953, the double helix has become the single most pervasive icon born of the genetic sciences, if not all of Biology. This is a particularly curious anomaly when we consider that DNA nanofibers were not directly imaged until nearly sixty years later, in November of 2012—a fundamental testament to the projective power of our genetic imaginary.[11] Prior to the recent advent of at-hand consumer technologies that expedite digital dissemination of provocative gene-centric content, gene-centrism encroached upon cultural discourse via print media.

Founded in 1981 and notable firstly for the fact that it remains in print today, *Genetic Engineering News* (GEN) became the world's first genetic engineering and biotechnology trade periodical. The affixation of a print media facet to empirical genetic discourses offered the first concrete indications of the aspirations, intentions, and progress of academic and industry professionals, to the lay public This assuaged a measure of collective concern surrounding genetic engineering as an industry, by fitting it

[11] Francesco Gentile and Manola Moretti, "Direct Imaging of DNA Fibers: The Visage of Double Helix," in *Nano Letters* 12, 12 (November 2012).

with a frontage appealing in candidness. The groundbreaking of this first arena for collective dissemination of collaborative biotech news, research, discourse, and capital was an immediate precursor to various conversations about the regulation of genetic and other biotechnological forms of engineering. The wheels of progress in applied genetics—with public eyes now trained—were thusly set into motion, greased by a projected good will from its practitioners. A succession of published reports that would come to constitute the preliminary framework of regulation over genetic engineering began just three years later.

On New Year's Day, 1984, the U.S. Office of Technology Assessment published a report entitled "Commercial Biotechnology: An International Analysis," forming the basis for discussions of economic and regulatory development to follow.[12] The following year, the NIH published a draft of "points to consider" regarding human gene therapy.[13] Eighteen months later, in June of 1986, the White House Office of Science and Technology Policy (OSTP) published a far-reaching "Coordinated Framework for Regulation of Biotechnology," establishing regulatory jurisdiction and principles for the USDA, EPA, FDA, NIH, NSF, and OSHA.[14] A surge in intellectual and economic investment in genetics and genomics followed the OSTP's regulatory framework.

What began in 1984 as a series of preliminary efforts prerequisite to legislation, eventually resulted in a display of confidence from the federal government: in 1988, Congress appropriated the first funds for sequencing the human genome. This precursor to the Human Genome Project started life with a nearly twenty-eight-million-dollar

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[12] Office of Technology Assessment, "Commercial Biotechnology: An International Analysis," 1984
[13] Barbara J. Culliton, "Gene Therapy Guidelines Revised," *Science* 228, 4699 (May 1985).
[14] Ronald Reagan, Office of Science and Technology Policy, "Coordinated Framework for Regulation of Biotechnology," 1986.

budget. Seemingly in reply, the FDA ruled in its 1992 Statement of Policy, that it would not unilaterally regulate bioengineered foods.[15] The characterizing trend of this progression was, quite simply, *curiosity*; subsequent to investment in the mapping of the human genome, was majority acceptance by one of the country's most powerful public safety organizations that human dietary practices might benefit from the incorporation of genetically modified organisms (GMOs). Healthcare was the next frontier.

In December of 1993, the FDA approved a form of recombinant DNA for treatment of cystic fibrosis, making *DNase I* the first FDA-approved gene therapy treatment. Two years later, the FDA lifted a multitude of special restrictions on biotechnology companies, allowing their products into the mainstream of drug regulation. This momentum carried into 1997, when an influx of funding helped the FDA break a backlog of New Drug applications, producing an all-time record number of approvals.[16] Two years later, however, in September of 1999, America's late-millennium honeymoon period with genetic research ended when a severe immune response to gene therapy caused the death of eighteen-year-old University of Pennsylvania student Jesse Gelsinger.

In terms of regulation, legislation, and progressive cultural acceptance of biotechnology and bioengineering, the following decade proved haunted by the disaster, consequently playing host to the two most explicitly restrictive pieces of bioengineering legislation to date. In the third quarter of 2001, President George W. Bush issued an executive order limiting federal funding of human stem cell research to the twenty-two cell lines already in existence at the time, relegating further research on human stem cells

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[15] Food and Drug Administration, "Statement of Policy: Foods Derived from New Plant Varieties," 1992.
[16] Food and Drug Administration, "Effect of User Fees on Drug Approval Times, Withdrawals, and Other Agency Activities," 2002.

to private sources of funding—shy of a death knell, but a considerable impediment to stem cell research. Four years later, in early 2005, this constraint was bolstered by a resolution issued by the UN, calling for prohibition of "all forms of human cloning inasmuch as they are incompatible with human dignity and the protection of human life."[17] Five years would pass before further legislation would come to bear favorably on genetic research, but in 2010, the U.S. District Court for the District of Columbia ruled to invalidate a number of gene patents, accepting the argument that genes are products of nature and, as such, cannot be patented.[18] April of 2011 witnessed greater momentum in acceptance of and morale surrounding genetic engineering, when the D.C. Court of Appeals lifted President Bush's 2001 injunction, opening the door for resumed federal funding of research on embryonic stem cells.[19]

Over the course of these thirty years, from the founding of GEN in 1981 to a step toward reinvestment in stem cell research on behalf of the federal government in 2011, the gene saturated society. The publication of a trade periodical bolstered and legitimized corporate "Biomania" of the Eighties, establishing the gene and its double helical doppelganger as players in the nation's capital economy; corporate America literally could not afford to ignore it.[20] With the backing of big business, 1986 to 1997 saw nearly a decade of progressive legislation over the biotech industry, genetic engineering, and academic molecular biology; the federal government invested in the sequencing of the human genome, then said it was okay for us to consume genetically engineered foods.

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[17] United Nations Fifty-Ninth General Assembly, "General Assembly Adopts United Nations Declaration on Human Cloning by Vote of 84-34-37," 2005.
[18] John Schwartz and Andrew Pollack, "Judge Invalidates Human Gene Patent," *The New York Times*, March 29, 2010.
[19] Bill Mears, "Appeals court lifts ban on federal funding for stem-cell research," *CNN.com*, April 29, 2011, accessed February 8, 2012.
[20] Dijck, *Imagenation*, 91.

The first FDA-approved gene therapy treatment was a pursuant indication of prevalent faith in the potentialities of gene therapy, and a record number of New Drug approvals bolstered the federal government's demonstrated stance on bioengineering as a worthy scientific vehicle to revolutionizing healthcare and our abilities to fundamentally, genetically improve the human condition. In 1998, the death of a young gene therapy patient gave pause to the rapacious legislative progress of genetic medicine, making it more than a decade later before a court ruling would hand down a new parameter for, and segue back into, continuing research: genes cannot be patented—a victory for all naturalists. And less than a year later, federal funding for stem cell research was back within reach.

Excepting a particularly static (reverent, contemplative) decade, legislative acknowledgement and acceptance of genetic engineering as both a science and an industry had an overwhelmingly positive trajectory. The past thirty years have thusly hosted a sort of inaugural phase of the gene's presence in socially-anchored media. Shortly before the end of this period, however, certain digital platforms began to change the face of genetic imaginary curiosities and anxieties. iOS- and Android-powered smartphones delivered unparalleled access to the World Wide Web to users' pockets, effectively functioning as encyclopedic nodes of the genetic imaginary in their hands. The iconic double helix is better suited to the graphical user interfaces (GUIs) of these new platforms than any medium prior, and is profoundly more mobile thereby.
I discuss the arrival of these gene-centric digital memes in the following section.

Memes and Soft Copy Genes in the Genetic Imaginary

Dawkins introduces the concept of a meme in the closing chapters of his first book, *The Selfish Gene*. To avoid a Dawkinsian slant and some of the less pertinent intricacies of what is often referred to as *memetics*, I defer to the OED for the definition of a meme: "A cultural element or behavioural trait whose transmission and consequent persistence in a population, although occurring by non-genetic means (esp. imitation), is considered as analogous to the inheritance of a gene."[21] Examples of memes include everything from infectious melodies to popular ideas, no matter how minute, so long as sufficiently self-contained to be recognizable and transmissible among persons. For Dawkins, these arbitrarily large tidbits of psychological stimuli deemed worthy of reproduction (for whatever reasons and however unconsciously), are to the flux and perpetuation of popular culture what genes are to modern evolutionary theory.[22] Being analogous to genes, the primary function of memes is to compete for replication, or popular recognition and subsequent transmission, throughout a culture. A healthy, viable meme for replication needs to be amenable to as many media as possible: competitive for "radio and television time, billboard space, newspaper column-inches, and library shelf-space."[23]

Memes might utilize such spaces to the fullest by boasting instantaneous and memorable appeal, but the transmission of nonessential information will always be

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[21] *Oxford English Dictionary*, 3rd ed., s.v. "meme," accessed March 16, 2012, http://www.oed.com. proxy.library.emory.edu/view/Entry/239909?redirectedFrom=meme#eid

[22] This analogy elides some details of interest. For one thing, we perceive culture as evolving far more rapidly than the biosphere; there is a disjoint between timescales. Further, the copying fidelity of memes is far less than that of genes; memes in transmission are more frequently subject to mutation (thus, it is more appropriate to focus on smaller timeframes). This accounts for the rapidly changing—or "popular"—aspect of popular culture.

[23] Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 1976), 197.

affected to a large extent by convenience. Hence, the transformative power of massively capable smartphones—which exist almost exclusively to make data convenient—must not be underestimated. Furthermore, ease of dissemination ultimately affects the fidelity, or accuracy in repetition, of cultural memes. Regardless of how interesting or share-worthy a .gif, anecdote, or other bit of information, one is only willing to put forth so much effort to convey or transmit it to others. This direct relationship explains why the introduction and advent of iOS- and Android-powered smartphone devices can be expected to have increased the volume and resultant proliferation of genetic imaginary discourse, for acts of transmission via these digital platforms have become astoundingly simple over the past seven years. This author sees full-size tablet devices (the use of which mimics the omni-capable, personal touchscreen devices regularly envisioned in sci-fi texts) as the most recent and notable of these developments, though further mention is beyond the scope of this thesis.[24]

For the purposes of this thesis, meme theory illuminates a vehicle for tracing the correlative timelines of the advent of massively capable smartphone devices and the recently projected neo-Darwinian gene-centrism explicated in this thesis. Courtesy of these mobile broadband technologies, dissemination of information is increasingly governed by concepts abridged and made tangible. Consider how each function and app on such devices is assigned a unique icon within a GUI; and how, much like manipulated genes, these icon-based GUIs are structured according to the configuration deemed most beneficial to a given user. Thus, by proxy, subscribers become familiar with the same organizational philosophies of genomic engineering before content even becomes a

[24] To name two dear examples: beginning in the mid-Sixties, episodes of *Star Trek: The Original Series* began to depict crewmembers using digital clipboard-like devices; and Kubrick incorporates a similar device into several scenes of *2001: A Space Odyssey* (1968).

factor. Content, subsequently, is responsible for actually implementing the graphical vernacular of bio- and genetic engineering, often taking the form of previously isolated sources of scientific literature, both popular and academic. Prevailing gene-centric paradigms becoming more visible and accessible ensured that the gene and its double helical doppelgänger were readily available for a revival in popular media. I conduct a brief case study of *Prometheus* here, to example this memetic landscape.

A Brief Memetics of the *Prometheus* Property

The recent upsurge in the visibility of gene-centric sensibilities, among smartphone subscribers at the very least (to say nothing of all who have desktop access to the Internet), has been more than sufficient to provoke populist imagination to an awareness of and fascination with genetics and genomics, as well what consequences—real and imagined—they hold for civilization and humankind. And what the populist imagination wants, it gets; albeit abstractly, this notion describes the primary engine of studio filmmaking as an industry. Producers seek to attract the largest conceivable audiences by constructing films around what, statistically, is known to draw said audiences; this is axiomatic. Subsequently, films might project novel memes into circulation. (Daniel Plainview's [Daniel Day-Lewis] demented rant at the climax of P. T. Anderson's *There Will Be Blood* [2007], for example, is the original context of the comical insult "I drink your milkshake!"—a phrase-cum-Internet-meme that now features across the Web and trendy t-shirts alike.) The more highly favorable (amusing, interesting, provocative, …) these new morsels of pop culture, the longer they will circulate throughout the 'meme pool' that is popular culture. In this section, I consider

Prometheus in relation to its franchise affiliations with the *Alien* quadrilogy. Scott's most recent film is an exceptional example of a text with a strong memetic identity.

I consider memories of the *Alien* franchise, which were explicitly invoked by popular press regarding *Prometheus* as a prequel film, as memes that inevitably influence reception of the latter (and, in turn, will come to bear on reception of its sequels). Basically, the film appreciated a fan base prior to release: owing both to the venerable Ridley Scott as director (*Blade Runner* [1982], *Black Hawk Down* [2001]), and the even more popular *Alien* franchise, for which Scott is widely credited, as the inaugural director thereof. Such memes—word of "a new Scott flick" or "an *Alien* prequel," etc.—were propagated across digital pages ranging from *Alien*-cum-*Prometheus* fan web forums to journalistic pieces, appreciating wide dissemination. The film's viral marketing campaign, though, is more typically illustrative of memes at work.

This diverse publicity strategy included the first promotional use of the TED brand (the three-letter, red-font logo of which is itself a meme), as well as further advertising partnerships with companies that would typically avoid affiliation with an 'R'-rated sci-fi film.[25] These groundbreaking strides in marketing give even more insight into the memes generated with regard to the *Prometheus* property; as stated above, it appears the strength of the memetic sum of 'Ridley Scott' plus '*Alien*' was a no-brainer even for typically conservative advertisers. Thus, the film appreciated broader avenues for advertising than any before or since, equating to unparalleled real estate for implementation of *Prometheus* memes.

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[25] Marc Graser, "Coors, Amazon, Verizon ride with 'Prometheus'," *Variety*, May 17, 2012, accessed September 21, 2012, http://variety.com/2012/film/news/coors-amazon-verizon-ride-with-prometheus-1118054160/.

A Promethean Shift

I characterize *Splice* and *Prometheus* by their adherence to gene-centric models of biological creation, growth, and mutation; and the maliciously theistic dynamic between creators and creations in their tales. In this section, I synthesize these features as constituting—in addition to a cohesive gene-centric worldview—a Promethean lineage. I draw this distinction in contrast to a Frankensteinian mode: the progenitor of sci-fi literature and, more specifically, sci-fi narratives of creation.[26]

Biological engineering at the hands of Doctor Frankenstein reads as a macroscopically piecewise, primitive ordeal: "I collected bones from charnel houses and disturbed…the tremendous secrets of the human frame. […] The dissecting room and the slaughter-house furnished many of my materials."[27] Most illustrations and adaptations of Frankenstein's (first) monster reflect an abridged, perhaps overly literal interpretation of this passage: a "tremendous human frame" is a reliable constant, and sutures often appear the only thing holding the amalgamated lummox together. Biological creation in the Prometheus myth, rather, transpires via dust, dirt, or some other tangible earth-matter, such as clay. The Titan's use of raw, elemental materials to create life resonates more closely with the fine-tuned capacities of geneticists, than Frankenstein's comparably profane methods. A historically recent cultural fixation on the minuscule—the intimately spliced, rather than stitched—motivates, instead, Promethean depictions of transgenic bioengineering in our science fictions.

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[26] I avoid the term 'creation narrative' here to avoid commitment to its denotations of the creation of the earth and its *original* inhabitants. While this is the scenario in *Prometheus*, *Splice* is concerned with neither genesis. To limit what constitutes one such text, by terming instances 'creation narratives,' would preclude films about cloning, not to mention the *Frankenstein* legacy itself.

[27] Mary Wollstonecraft Shelley, *Frankenstein: Or, the Modern Prometheus* (Auckland: The Floating Press, 2008), 67.

The theistic component of the creator-created relationships in these two films further sets them apart from the *Frankenstein* script. The trajectory of Frankenstein's meddling is defined largely by escape: first his monster's and subsequently his own attempts to eschew responsibility and sidestep guilt. The Prometheus of mythology, as well as the creators in *Splice* and *Prometheus*, are characterized, rather, by investment in their respective creations. The Titan is probably best known for having stolen fire from Mount Olympus or, consequently, having been chained to a rock by Zeus to have his regenerating liver eaten out daily, by an eagle. But prior to either event, Prometheus became the creator of humankind, and it was on their behalf that he stole from the ruling gods.

These two pivotal distinctions constitute the exceptional intricacies of two recent films of transgenic creation, aligning their scripts more closely with a Greek myth than Romantic-era sci-fi literature. The consistency of the above outlined combination of four filmic motifs is what implicates this modal shift as a consequence of genetic imaginary discourse. Taken individually, none of the four would be uncommon to find in, say, any given cloning film from the decade of the clone. As a unified collective, however, they narrate the contemporary configuration of our genetic imaginary.

Chapter Two:
Splice: “Alive. And in the flesh.”

In Vincenzo Natali’s *Splice* (2009), two ambitious geneticists follow a slippery slope into a moral gray area of bioengineering, prolonging a rogue experiment beyond all reason. Before long, they are nurturing the rapidly growing and learning Dren—a part human, part many-other-things hybrid—in secret. She is intellectual and inquisitive, and so captivity inevitably incites revolt. Dangerous intellect eventually becomes secondary, however, to Dren’s physical formidability.

Geneticist and biochemist Elsa Kast (Sarah Polley) delivers the above epigraph to a room full of stockholders, preparing them for the unveiling of their investment: experimental organism H-50 (the live and flesh embodiment of which is a cooing, wriggling blob with no eyes, limbs, or other discernible features). Elsa’s delivery of the familiar phrase makes it unfamiliar: measured, considered rightly as two distinct biological characteristics rather than one. Her pause prompts recognition that this handy phrase comprises two autonomous qualities; she pulls the rug out from under a commonplace synecdoche in which “the flesh” stands for the physical and existential whole of a being. Being specialists in the genetic engineering of novel organisms, Elsa and her laboratory and domestic partner, Clive Nicoli (Adrien Brody), are well familiar with the atomistic axiom that life exists independent of and prior to macroscopic, embodying flesh. Life thrives at a microscopic level, that of the gene being the most noteworthy in their field. Elsa's perspective as a geneticist prompts her to acknowledge and emphasize the biologically fundamental in this most nuanced way: with delivery of a single line. By this point in the story, the film has already made several similar nods

toward the fact that one need be mindful of the gene's dominance throughout modern biological paradigms.

The opening credit sequence, for example, comprises two distinct phases, representative of classical Darwinism and, successively: contemporary, gene-centric neo-Darwinism. *Splice* begins with a series of studio logos, each dissolving into view via graphic match with an existing radiographic print. The triangular skull of a toad, made visible as an x-ray, becomes the Warner Brothers' shield; a cat's arched spine transitions into the full moon backdrop of the Dark Castle Entertainment logo; and so forth. Each maintains the spectral white-on-black coloration of its radiographed source image. With a searing 'zap' and a final flicker of fluorescents—all light is extinguished. This department of the facility is being shut down; two-dimensional views of macroscopic morphological structures, it seems, are obsolete tools.

Cast and crew credits follow, yet the bio-graphical topography has changed. An all-digital long take meanders fluidly through dark expanses of cloudy green bile, roving the surface of a spherical mass. The occasional detailed glimpse suggests a reptilian ontogeny. Particulate debris swirling throughout (consider the visual effect of the 'floaters' that plague the vitreous humor of the eye) complete the aesthetic of intra-corporeal immersion. After lingering on ‘Adrien Brody’—text written of darkened cells on a grotesque honeycomb texture, in lieu of standard characters—a disorienting pull-back into and through the ether selects a new internal texture. This visual is ostensibly more complex than the previous expanse of nondescript biological innards. An intricate interweave of (blood?) vessels, barely confined by a thin flesh, writes co-star 'Sarah Polley' into the film. This trend continues: anatomical features and appendages become

gradually more articulate, though ultimately nondescript.[28] At last, the title throbs into view as a web of dangerously dilating vessels beneath a throbbing green-tinged dermis. With this second phase of the opening credits, audiences have been whisked through a fetal ontogeny, witnessing a gestation in its entirety. This title-screen monster has a heartbeat: is both alive, and in the flesh.

The two-phase structure of *Splice*'s opening credits illustrates a historically recent paradigm shift in the biological sciences, from classical Darwinism to neo-Darwinism. This transition was coordinated within the scientific community, comprising a decade of synthesizing ideas, beginning in the mid-Thirties. Also known as the *modern evolutionary synthesis*, the endeavor was, in large part, an effort to address difficulties caused by specialization and poor communication among biologists. In this thesis I focus on a more recent development, within neo-Darwinism, which remains perhaps the most popular theory therein.

In 1976, British ethologist and evolutionary biologist Richard Dawkins's first book, *The Selfish Gene*, instigated widespread acceptance of *genes* as the fundamental units of natural selection. The OED provides a superb ten-second Genetics course, without falling prey to discrepancy over theoretical minutiae that do not come to bear on this thesis. Therein, a gene is defined as "the basic unit of heredity in living organisms,

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[28] Actor 'Brandon McGibbon' surfaces on what is most readily identifiable as the dorsal fin of a shark, the root torso of which is obscured by darkness. This is the only clearly recognizable body part lurking in the opening credits, and the evocation of *Jaws* (1975) strikes upon second screening if not first (after confirmation that there is no such squaline creature/feature in *Splice*).
[28] *Oxford English Dictionary*, 3rd ed., s.v. “gene,” accessed March 16, 2012, http://www.oed.com.proxy.library.emory.edu/view/Entry/239909?redirectedFrom=gene#eid.

originally recognized as a discrete physical factor associated with the inheritance of a particular morphological or physiological trait."[29]

Gene-centrism was a rethinking of classical Darwinism, which observed evolutionary competition and selection as taking place at the level of the organism or population. In effect, Dawkins's anthropomorphic manifesto for the gene proposed a sort of zoom-in from the established tenets of Darwinism. Whereas Darwin, among others before and after him, attempted to discern natural selection as taking place at the level of organisms or groups of organisms, Dawkins proposed a theory more difficult to disprove—due in part to the fact that its processes are invisible to the eye. His guiding logic: if competitive "replicators" such as genes begat life, genes are still begetting life. Within its milieu (evolutionary and molecular biologies, to name the most immediate), the implications of this theory have been profound, and remain central to evolutionary theoretical debate today. Though the opening credit sequence of *Splice* condenses the details of this paradigm shift, the progression and outcome are the same: as of late, microscopic constituents are of more concern than organismal wholes. Just as this broadest distinction encapsulates the progression from classical to neo-Darwinian theory, it is a recurring concept in this thesis. *Splice* and *Prometheus* foreground the power of exploited genes continually, contextualizing narrative crises as extravagant genetic imaginary nightmares.

The sensational progression of the opening credit sequence is ultimately carried to term, providing a transition to Scene One. All matter in view surges forward, evacuating toward a blinding light (a metaphor for death, typically, but rather a life-giving passage in context). Emergence from this womb is point-of-view: Clive and Elsa become discernible

through a constrained and distorted iris. The first-person shot is short, but this framing of entry into the ex utero world of *Splice* recommends that audiences themselves identify as the creature that is likely to prove problematic, in terms of a tumultuous creator-created dichotomy. The effect is the realization of our culpability in the scheme, the guilt from which seems to be a source of anxiety in any conception of the genetic imaginary. For the instigators of transgenic experimentation, in films as well as society at-large, there will be marked consequences. In *Splice*, illustrations of these characters are hyperbolic.

Science and Scientists in Our Genetic Imaginary

Clive and Elsa possess specialized skills as professional scientists—the ability to render complex transgenic life forms, for example—but lack common sense, illustrating how dangerous is such practice when wielded impulsively. Clive broadcasts a hipster-slash-rock-star persona, replete with a ‘bad attitude’ sense of fashion. (His t-shirt of choice for a roundtable with the lab’s director boasts: *I bring NOTHING to the table.*) In the laboratory, he is confused and ineffectual; one of his earliest lines of dialogue, spoken immediately after the birth of H-50, is an admission of the fact that he just helped bring into the world a creature the behavior of which he knew little about in advance: “What are they doing?!” Clive has little claim to intellectual contribution and far less to scientific aptitude.

Egomaniacal Elsa is front-woman for the haphazard duo, with a psychotic bite far worse than her bark. A handful of abrupt flashbacks outline her experiences with domestic abuse in the past, serving as explication of Elsa's mistreatment of her bioengineered 'daughter' in the film. Presumably, this is the same justification for the

explosive emotions and psychoses that she brings to the narrative and character dynamics. Her spirited, aggressive arguments are the driving force behind the team's poor decisions, filtering all reason and logic through personal fixations.

One of the most basic effects of these filmic personalities is a tensioning between character and audience, which is generated through our incredulity at their ridiculously questionable decisions (*How absurd! Who* are *these people?*). This function of the Mad or—more criminally—'Ignorant ' Scientist is archetypal, rooted in reasonable concerns, for the Mad Scientist is not exclusively a fictitious character type. A number of criminal personalities throughout history have fit the bill: Josef Mengele of Nazi infamy and Vladimir Demikhov—scrutinized for having transplanted additional heads onto dogs in the Fifties—are ready examples. Fictional instances of these scientists outnumber the actual criminals by a wide margin, which indicates that cultural discourse historically *amplifies* the severity of the latter, particularly when recapitulating them in the form of creative narrative.

The Quintessential Double Helix

At the aforementioned roundtable meeting with their director, Clive and Elsa present a proposal for funding using a short, stylishly animated video. Across the top of their presentation monitor: seven square icons (six faunal and one floral) mobilize to head seven side-by-side columns, each containing a spiraling double helical strand. The majority of each strand fades out, leaving only a 'rung' or two. These remaining segments align left with a brisk, tidy slide, forming one single "AMALGAMATED GENE SEQUENCE" strand. The remainder of the video devolves into a sort of

flowchart, equating a picture of Clive and Elsa's prized experimental blob with a few curlicues (representing the beneficial proteins it produces), which then dissolve into a handful of unmistakable bicolored capsule emblems—indicating a pharmaceutical end goal.

This quick graphical gloss of transgenic bioengineering is exemplary of the genetic imaginary itself: truncated in terms of unessential details and similarly unconcerned with intermediary steps that exist between pertinent stages of affiliation. An obvious consequence of the double helix's hard science derivation cum cultural (mis)appropriation, is the sacrifice of complex empirical denotation upon its estrangement from native technical contexts or audiences appropriately literate; the hard science is ultimately extraneous to lay discourse. As a scientific tool, the double helix can indicate a finite set of concepts, but as a popular icon and provocateur of our genetic imaginary, it can mean well near anything.

Clive and Elsa go rogue when their financier, a pharmaceutics entity, insists on advancing their research to "Phase Two...the product stage" of development. The two acquiesce, but take on a side project in defiance, endeavoring to synthesize a viable hybrid genome that will exhibit the positive genetic health benefits they have been synthesizing, in conjunction with human DNA (the enticing prospect denied them by the politics of research funding). Back at Clive and Elsa's acronym-ready Nucleic Exchange Research and Development lab, a second notable snippet of dialogue demonstrates their gene-centered philosophical approach to the task at hand—as well as their work in molecular biology generally. Discussing preparations, Clive is curious about the source of the human ingredient they will be using: "What's the profile?"

Elsa again proves to be the more informed of the pair: "Anonymous female donor, clean medical and heredity—the usual."

"—a dime a dozen," Clive dismisses.

"—one in a million," she encourages.

Neither is wrong. On a macroscopic, classically Darwinian level, Clive is right; human females free of major genetic defects are not particularly uncommon. Elsa is thinking beyond embodying qualities, though, emphasizing the genetic uniqueness of their sample specimen. (Though far less pithy, she would not have been wrong in saying "one in *seven billion*.") The pair's laboratory tedium plays out in montage, fulfilling the film's efforts at graphical representation of the gene.

Extreme close-ups of computer simulations pan and dissolve; time-lapse footage shows Clive and Elsa bustling around the lab, hunching over precision instruments and tweaking chemical combinations. A dialog box recurs on the primary workstation monitor, translating their efforts: "Human / Animal Hybrid Splice UNSUCCESSFUL." The montage gives a thorough account of the most familiar graphical invocations of genetic science. First-letter abbreviations of the four nucleotide bases of DNA (adenine, cytosine, guanine, and thymine) scroll by in meaningless 'gattaca' chains on one computer monitor while magnified, lopsided-'X' depictions of chromosomes float through some digitalized ether, on another. DNA assays—a procedure the results of which are often rendered as distinct and aesthetically pleasing multi-colored gradient ladders—contribute another geometrical graphic to the fast-paced imagery.

The scientific specifics of the story told via this montage (if it is a coherent narrative) are beyond the scope of this thesis; its aesthetic form alone is exemplary of a

graphical genetic imaginary vernacular: fluid, amorphous, and fleeting. The montage elides a time-consuming process of trial and error on Clive and Elsa's part ("splice UNSUCCESSFUL," ad nauseum). These images—estranged from technical definitions—function no differently than the omnipresent double helix: provocateurs of ineffable, genetic imaginary hopes and fears.

Upon generating a successful splice, Elsa insists on fertilizing an embryo—a textbook moral gray area and obvious violation of any formalized ethics code. Clive's counterargument is succinct: "What's the point if you can't publish?" His question is a dramatic statement of character. The merits of conducting publishable research are undeniable, but one likes to think it is not a scientist's primary motivation. Again, we are discouraged from trusting these genetic engineers, regarding their motives. Elsa claims to be driven by a need "to be sure we really did it, to know for sure," whereas Clive has no such ambitions without the promise of recognition.

Browbeaten more than convinced, Clive inseminates the embryo. Dren is biologically conceived with the press of a single key, which initiates the joining of a sperm and egg—sexual reproduction, by definition—but carried out in a tidier than usual fashion. A single monitor, wed to the artificial womb that Clive and Elsa use for experimental gestation, shows an enlarged microscope view of an orb being penetrated by a comparably miniscule syringe. Again the film relates the collapsing of complex genetic processes and research, this time with two of the most abundant and quotidian examples of icon-gesture pairings: sexual congress and, quite simply, the pressing of a button.

Mutagenic Dren

The transgenic hybrid organism that Clive and Elsa fashion makes even more glaring their flaws as practitioners of life-giving science. Resisting an earlier promise to Clive to terminate the organism's lifecycle before birth, Elsa fawns over Dren in a mothering capacity: at first, feeding and keeping the rabbit-like biped as a pet and, later, fostering her both intellectually and emotionally. Elsa's conduct changes from that of a biologist eager to pursue experimentation for humanitarian ends, to a manic quasi-anthropologist, bent on raising in captivity a novel transgenic organism. Elsa's troubling judgment in her relationship with Dren is intermittently subsumed by Dren's bewildering physical evolution, or mutation, the trajectory and spontaneity of which drive the film's narrative action. *Splice* hinges on Dren's displays of instantaneous mutability. Her split-second adaptability illustrates one extreme of concern with the irrepressibility of genetic experimentation gone awry; nothing would be so formidable as an organism capable of 'evolving' life-saving physical adaptations before eradication.

The first of these anti-climaxes is the activation of Dren's ability to breathe underwater. When Elsa runs a bath for the sickly creature in a cavernous steel laboratory sink, Clive seizes an opportunity to terminate their experiment. He overpowers a sobbing Elsa to hold Dren submerged, drowning her. Her genes rebel instantaneously against eradication, though. Seconds after the bubbles from Dren's dying breath break the calming surface of the water, her eyes—and gills—open with a start. The "tumors" that her parents had identified on an earlier x-ray scan were the creature's budding auxiliary respiratory mechanisms (another of their glaring oversights). This scene illustrates the

epitome of fears centering on our inability to know the potential capabilities of novel, genetically engineered organisms.

In a later scene of spontaneous mutation, Dren sprouts wings. As she continues to grow into a more formidable organism—in both stature and demeanor—Clive and Elsa pay higher tolls for their ignorance and irresponsibility. The consequences accumulate until their crimes are no longer victimless, the repercussions of stupidity escalating in dramatic fashion after Clive copulates with Dren. The counterpoint is Dren's spontaneous sex change, pursuant to which, 'he' rapes and impregnates Elsa. What do these climactic carnal offenses contribute to an understanding of Dren as a character agent of the genetic imaginary? In her analysis of the titular character in Roger Donaldson's *Species* (1995), Stacey reads a similar transgenic hybrid, named Sil (Natasha Henstridge). In the quote below, Stacey comments on the same, but her inquest resonates just as strongly as a provocation of *Splice*:

> If sexual selection is no longer the name of the biological game, and life itself is no longer governed by sexual congress, does that mean it has been desexualized? …Are [we] newly polymorphous? What are the sexual politics proper to…transgenic desire?[30]

This passage is effectively an example of genetic imaginary inquiry as it might pertain to the effects of novel transgenic organisms on sexual reproduction, and it speaks intimately to *Splice*, wherein intra-family partnering lends a sort of imploring intimacy to interspecies amorousness. The same questions surely undergirded Dren's pre-production development—not explicitly, perhaps, but by her intellectual progenitors simply

[30] Stacey, *The Cinematic Life*, 219.

harnessing the genetic imaginary creatively. In one particular respect, however, the transgenic, mutagenic Dren remains anonymous throughout the film: verbally.

Non-verbal Communion

Splice offers pointed examples of non-verbal communion between creator and created, depicting a particular form of coexistence between creator and created; despite continual scenes of Dren's interactions with her human counterparts, the two species never exchange dialogue. Firstly, in this section, I example the forms and functions of the key scenes of non-verbal relations between creator and created in *Splice*. Though intriguing, all attempts at verbal communication between Dren and her parents are ultimately confounded and unproductive. In this section, I offer an answer as to why.

Playing with Scrabble-like alphabet tiles one day, a young Dren spells out the word written on Elsa's shirt, 'nerd,' which Elsa later glimpses upside-down, deriving Dren's name. This reversal (a tactic which will not yield pronounceable results with any regularity) is the film's clearest acknowledgement that Dren and her parents see things differently, and are bound to miscommunicate. Dren remains anonymous in a sense, owing to her lack of a voice. The majority of her 'dialogue' comprises animalistic chittering and whimpering, more in response to the tone and comportment of her parents than the content of their speech. Her first and final utterance—a labored two-word phrase, parroting a snippet of Elsa's previous dialogue—is unoriginal, averting characterization. This lacking verbal affinity is significant, as it would be in any film prominently featuring a mute character.

Stacey offers considerable insight into such complications with language, which are seemingly intrinsic to the genetic imaginary. For while the gene as a minuscule point of focus had specific consequences for the scientific community, popular curiosities and anxieties were diverse, imaginative. This was not intrinsically undesirable, but it means that popular language for discourse on such topics was also diverse and imaginative. Stacey identifies a fundamental powerlessness to express "genetic dreams and nightmares" within this uncharted linguistic territory; familiar, quotidian language is insufficient.[31] The scientifically savvy might choose to employ a technically appropriate register, but to what lexicon does the lay public turn? Dren's speechlessness in *Splice* corroborates Stacey's observation: that there is not one. I delve further into the non-verbal coexistence of creator and created, in *Prometheus*, in the next chapter. Though it is a silent one, Dren's legacy endures, hurdling voraciously forward into a second generation.

Dren Endures

Of the film's human duo, only Elsa survives—and admirably so, in neo-Darwinian terms. The final scene reveals Elsa's pregnancy. Though Dren was finally killed, half of her/his genome persists, in her/his offspring with Elsa. The endurance of transgenic genomes is an open-ended plot element, provocative due in large part to the fact that it portends for a hypothetical world, one that extends beyond the film's own diegesis. This being the case, *Splice* and *Prometheus* inevitably conclude having raised a question (or many) that blatantly prompts speculation: one final, enthusiastic provocation of the genetic imaginary, before being instructed to leave the theater and essentially make

[31] Ibid., 186.

of it what we will. This function of the enduring genome sounds familiar because it is not so different from that of the genetic imaginary.

Splice is generic in multiple ways: the arbiter of the mad scientists' woes is an experiment gone rogue; the double helix features in a (semi-)educational clipart video; and the use of crime-procedural-esque montage stresses the laboratory setting as host to novel organismal experimentation. I have outlined how the less typical elements in-between the generic, outline a neo-Darwinian gene-centrism, courtesy our genetic imaginary. The film's two-phase opening credit sequence alone stages two such messages: molecular biology has revolutionized Darwinian views; and one's identity is ultimately written in her biology. The film's most affecting and novel breaks from convention represent where it states its most adventurous hypotheses, which are ultimately creative projections of the genetic imaginary. *Splice* prods our genetic imaginary with a classically cautionary tone, warning hyperbolically of what might result from creative genetic meddling in the real world, and employs the double helix icon in the most familiar ways. These small, somewhat claustrophobic sci-fi comforts (which include further the withdrawn two-person couple as protagonist pair, and the remote barn in which they keep Dren) govern the trajectory of the genetic imaginary thinking it evokes. Effectively, the concerns that *Splice* raises are bound to familial, distinctly earthbound scenarios. This is but one example and outcome of contemporary gene-centrism having molded a transgenic cloning film according to the shared cultural discourse of a genetic imaginary.

Chapter Three:
Prometheus: Gods and Monsters

In 2012, Ridley Scott's *Prometheus* emphasized precisely the same combination of tropes outlined in *Splice*, including: pivotal scenes structured around the iconography of molecular biology, inept and misguided scientists, the ongoing evolution of novel transgenic organisms, and a verbal language barrier between creator and created. In starkest contrast to *Splice*—an intimate three-member family portrait—*Prometheus* is an epic of cosmic proportions. The following reading of the film embraces this variance, providing a complementary example of the ways in which gene-centric philosophy has begun to show through in mainstream science fiction cinema

From the soaring opening credit sequence (filmed over the glacial desert crags of Iceland, though not identified as such) to Scotland's Isle of Skye, to deep space, in rapid succession, *Prometheus* does not hesitate to establish a literally interplanetary reach. The film's ideological reach rivals this ravenous spatial reach, saturating the diegesis. The extent of the narrative's conceptual reach is palpable, as the work alternately evokes and is flippant regarding some of humankind's oldest and most provocative quandaries—all framed in terms of genetic descent. In the megalomaniacal words of the Weyland Corporation's founder and CEO, Peter Weyland (Guy Pearce): "Where do we come from? What is our purpose? What happens when we die?" Accordingly, the thematic emphasis of *Prometheus* is on cosmic relationships: a trial of the distinctions that—classically, at least—separate creator from created. In a sense, the film reaches outward with its genetic imaginary antennae, relative to the domestic, earthbound hypotheses that structure *Splice*.

The conceit of *Prometheus* is that the aforementioned Peter Weyland is responsible for bringing together some of the world's most prolific scientists, in the interest of having them investigate what he believes to be the location of humankind's extraterrestrial creators. The motley crew includes a strongly spiritual scientist as principal protagonist, a pot-smoking geologist, a fatally reckless biologist, and a supporting lead who puts no stock in the scientific discoveries his team makes throughout their mission on planet LV-223. This is striking, as these include the profound breakthrough that humans and Engineers, their alien progenitors, embody a "DNA Match." The crew unleashes a pathological mutagen while planet-side (which marks the decline of their number), and their fatal follies are exacerbated by Weyland's surrogate physical presence within the crew, his android "son," David (Michael Fassbender). After David discovers a living Engineer in stasis, Weyland resolves to resuscitate it, ultimately lusting after the key to immortality. The Engineer is overpoweringly murderous, though—far from inclined to entertain human curiosities and supplication. He massacres all but one of them.

For the purposes of this thesis, there are two key components to this framework. Firstly, humans are the creations of the extraterrestrial Engineers, who seeded humankind by sacrificing their own genetic material. The illustration of this act, in the opening scene, states the film's gene-centrism early. This creator-created relationship is not relevant per scientific accuracy, but is significant because it equates creator to creation. Secondly, this cosmically destabilizing deduction is made particularly provocative by the film's deeply spiritual, cross-wielding lead protagonist. This appropriation of Christian iconography, within an opus of gene-centric iconography, declares even more boldly: a gene-centric

worldview dissects the formerly discrete categories of God and Man. So, in addition to the spiritual pretense of sprawling, intergalactic settings, *Prometheus* chances to explicitly address the incompatibility of neo-Darwinian evolutionary theory and religious Creationism—possibly the most popularly contested topic in the genetic imaginary. The content of this dialectic is beyond the scope of this thesis, but the genetic imaginary anxieties common to it are noteworthy. This, among other concepts, is instigated as early as the film's introductory scene.

The prologue sequence of *Prometheus* illustrates a sci-fi creation myth: a form of biological creation by disintegrative self-sacrifice. 'Unscientific' is a fitting descriptor of the process depicted, but for all the things the scene does wrong by scientific standards, it resonates closely with neo-Darwinian models of biogenesis on Earth.[32]

Seeding Genes

The opening credits having swept across miles of alien terra, the frame finds a mammoth flying saucer and the lone passenger it is leaving behind. An ashen preternatural giant (the aforementioned Engineer), muscled across every square inch not covered by his loincloth, watches its departures from the crest of a waterfall. He breaks the seal on a small ceremonial basin. Its contents are organic, a fluctuating gel that takes on life in response to the immediate change in atmosphere. The titan drinks, and the biochemical compound begins coursing through his system in a matter of seconds. A zoom-in to sub-dermal levels rides a tidal wave of the black liquid as it courses through his veins, consuming them. The zoom penetrates further before settling among a field of

[32] Pseudo-scientific theories of such 'Ancient Astronauts' seeding humankind on Earth, are more respectably clad as *paleocontact hypotheses*, the first example of which is most commonly credited to Swiss author Erich von Däniken.

unmistakable double helical strands, mere seconds before they disintegrate into spherical particles. When the Engineer's body can no longer support its own weight, he tumbles over the falls, trailing genetic material like a dying comet.

Underwater, the remnants of his DNA disperse through the swirling water, purposefully, depicting in reverse the initial destructive process: new DNA strands zipper into existence. A rack focus brushes the icon aside, highlighting the intra-molecular backdrop: *mitosis*, a type of cell division whereby two identical sets of chromosomes derive from one, is underway. Life is developing at an unfathomable rate. Much like the opening credit sequence of *Splice*, this introductory scene narrativizes one of modern molecular biology's most prominent theories. Its focus on the composition of double helical strands, or genes, from replicating molecules, as marking the creation of life, summarizes life in Richard Dawkins's "selfish gene" theory. I preface analysis of the above title sequence with a preliminary explanation of this concept.

The Selfish Gene

Dawkins published *The Selfish Gene* in 1976. The 368-page text is his manifesto for the gene as the fundamental unit of natural selection. He begins abstractly, with the concept of a "replicator,"[33] the first instance of which dates back to the "primeval soup."[34] (According to 'soup' theories, the early Earth's radically variable atmosphere was responsible for *abiogenesis*: essentially, the ascent of the biological from the chemical.) In terms of Natural Selection, the beginning of life in this way marked—and still marks—the beginning of competition. For Dawkins, the behavior of these earliest

[33] Dawkins, *Selfish Gene*, 15.
[34] Ibid., 17.

molecules—their attempts to out-replicate one another for superiority in the soup—is exhibited today, some four billion years later, by genes. The long-term result of replicators, or genes, in competition, is what we call Evolution: the building of bigger and better "survival machines"—the most bewildering examples of which are us humans.[35] The bottom line, biologically speaking, is that humans are the survival machines of, by, and for the genes constituting their respective genomes; it is more proper to think of genes as having *us*, than vice versa. The *Prometheus* prologue illustrates this ascent from the soup, via increasingly complex replicators, in only a matter of seconds: from gene-like molecules purposefully orchestrating a strand of DNA, to multicellular organisms.

At the close of this scene, all signs point to the pale uber-human as the allegorical Prometheus, come down from Mount Olympus to create humankind. The martyr whom we witness carrying out this life-seeding sacrifice is certainly implicated as supernatural, somehow more than human—if only due to his physique. The scene simultaneously suggests otherwise, though: clearly depicting a mortal. Through its focus on the phenomenal formation of new DNA segments, from a pre-existing genome, the film is already challenging, via direct contradiction, the lines distinguishing creator from created. If they are genetically identical, do they not possess equal potential? This lofty equation is encapsulated in an unmistakable illustration of genetic re-appropriation (disintegration, then reintegration): the iconic DNA double helix graphic.

The following scene introduces Doctors Elizabeth Shaw (Noomi Rapace) and Charlie Holloway (Logan Marshall-Green) on Scotland's Isle of Skye, nearing completion of an archaeological expedition. Shaw summons Holloway to a freshly excavated chamber, full of prehistoric cave drawings, one of which they recognize from

[35] Ibid., 21.

prior expeditions—and which excites them: a semi-circle of rudimentary figures, prostrate before a gigantic figure who points skyward, to a constellation. Shaw and Holloway interpret the scene, having discovered its recurrence across a number of prehistoric civilizations, as an "invitation " from the extraterrestrial creators of humankind. The facts of the narrative are not so simple. An invitation it may be, but they misinterpret the author's intent; they are anything but welcome. And so the mission that transpires, planned exclusively around their research, is already doomed, by a simple misunderstanding. This nondescript drawing on stone, highly lauded, comes to symbolize the formidable language barrier that will thwart the team at every turn. In the following scene, David the android, too, is established as an embodiment of humankind's language deficiencies as a component of the genetic imaginary.

As active attendant to the ship throughout the *Prometheus* crew's two-year, en-route hibernation, David has plenty of time to devote to self-enrichment.[36] Most notably, he specializes in linguistics, preparing to communicate with what- or whomever the expedition might encounter. Despite his technical understanding of earthen and alien languages, David's linguistic capacities prove insufficient to engage in dialogue the lone remaining Engineer whom they find on LV-223. I return to this concept of the gene-centric ineffable as unspeakable, in this chapter's final scene analysis. As the *Prometheus* nears its destination, David resuscitates the crew.

The Holo-Ghost and His Followers

A hologram of Peter Weyland, claiming to have died some years prior to the expedition reaching its destination, greets the crew. The egomaniacal billionaire specter

[36] The exploratory vessel, too, shares the Titan's name.

lays bare the film's heavy-handed themes: "I have spent my entire life contemplating the questions: Where do we come from? What is our purpose? What happens when we die?" Here the film continues with its gene-inflected plot, for the first of these questions is identical to the philosophical rhetoric of modern evolutionary biology: how and under what circumstances have we and the rest of the biosphere come to be? Weyland's second question functions similarly, reflecting a philosophy stemming from popular gene-centric literature and thought: how do we proceed with conceptions of 'purpose' while being simultaneously surrounded by an awareness of ourselves as evolved to do nothing more than perpetuate our genes? This dual interpretability of Weyland's musings—suggested as spiritually motivated, but identically evocative of scientific philosophies—is the first indication of the overt interplay there between which transpires.

Shaw and Holloway take the stage in turn to debrief the crew, explicating their interpretation of the pictogram from the archaeological dig. Holloway narrates the recurring depiction as men, "worshipping giant beings pointing to the stars." To synopsize: the appointed star configuration therein, when mapped against the known universe, reveals the location of an earth-like, theoretically habitable planet. Shaw continues: since the inexplicably recurring cave art proved to be a star map interpretable by humans, to a planet habitable by humans, it is an invitation to humans. This proves to be some of the crew's more logical, inductive thinking, for the *Prometheus*—as severely as *Splice*—is rife with incompetency. Shaw's glib statement that the authors of the message "made us" rubs Millburn, the crew's field biologist, the wrong way.

He is reactive, acting out precisely the ordeal that happens at any given juncture where skeptics of gene-centric evolution will not consider reconciling arbitrary beliefs

with scientific evidence: “If you’re willing to discount three centuries of Darwinism, that’s…*phew*…but how do you *know*?” Millburn’s reasoning here is askew, for the prologue montage of biological life’s ascent from the primordial soup is a surprisingly accurate rendering of the current neo-Darwinist paradigm of evolutionary biology. The montage of micro-evolutionary concepts illustrated in brief actually outlines some core tenets of gene-centric evolutionary models, namely: replication and genetic inheritance. So while Millburn’s gripe seems in defense of Science, his dialogue is at odds with what audiences know from the film’s early scene of swirling genes. Such ignorance, from the variety of scientist that should be most passionate about learning the specifics of how humankind came to be, is an early indication of the pseudo-scientific behavior that propels the narrative. In much the same fashion as in *Splice*, the scientist characters in *Prometheus* sustain erratic behavior.

Millburn is in good company as far as questionable methods go; Shaw counters with a more reprehensible response: “I don’t. But it’s what I choose to believe.” While faith-based belief and empirical Science are not mutually exclusive, it is prudent to be cautious of the former, introducing biases into otherwise empirical models of the natural world. The crew gives plenty reason to doubt their sensibilities, flagging themselves as scientists of whom to be wary. The crew’s unflinching reactions to the discoveries they make on LV-223, later in the film, offer subdued if striking evidence of the same.

What About Gods?

The chemical or physical inventor is always a Prometheus. There is no great invention, from fire to flying, which has not been hailed as an insult to some god.

- J. B. S. Haldane

The first of these paradigm-shifting discoveries is that the ancient Engineer DNA found on LV-223 is a "DNA Match" with a human sample. The technical specifics of this breakdown are auxiliary to the depicted process that yields it. Therein, the iconography of our genetic imaginary is implemented alongside futuristic equipment, in effect depicting a mastery of DNA analysis. Utilizing a microscope's "genetic view" function and a green laser mounted on a fluidly rotating arm, to "isolate the strand," Shaw effortlessly initiates a comparative analysis. A monitor depicts a literal graphical overlay of "SAMPLE DNA" upon "HUMAN DNA," utilizing an assay depiction. Upon seeing the "DNA MATCH," Shaw is stunned. The microscopic procedure and scientific terminology are vague so that the imagery and message are clear: humans comprise the same hereditary stuff as Engineers. Holloway's reaction to this discovery marks an unsettling instance of biased, unscientific attitudes. He interrupts what starts as Shaw's declaration of their success, devoid of any trace of proper wonderment: "This is—"

"—the most significant discovery in the history of mankind—oh, I know. It's incredible, it really is…but I wanted to talk to them."

Even after stating himself the literally global impact their discovery will have upon civilization, he comes away from the experience downtrodden. This scientist's expectations were of alien encounter. Shaw and Holloway's behavior in this scene is so uninspired as to be unnatural, confusing. This depiction of scientists reaching ever further, unflinching at their own success is poignant. The duo glosses the entire earth-

shattering topic, addressing instead Holloway's delusional woes. A segue in conversation makes for the first scene that explicitly raises Shaw's previously subtextual spirituality.

Holloway's response to the revelation that Engineers created humankind is that Shaw is now free to lay aside the Christian cross she wears around her neck; *they* made us—so it must be that 'God' did not. This scene lays bare a fascinating progression: revelations in Genetics yield the abolishment of the god-figure. The state of adherence to organized religion is beyond the scope of this thesis, but Holloway's offhand denunciation of the world's most practiced religion—including its reverence of God as the immortal creator of humankind—reiterates a very real consequence of gene-centric understandings of the natural world. Just as the natural sciences are atheistic, so is living according to them. The gene, as modern scientists know and use it, is capable of sufficiently fulfilling the two defining functions of a supernatural. Does the imperceptible god-figure face an imminent ousting? Firstly, there is compelling evidence that genes (and the preceding forms of their similarly replicating predecessors)—over the course of roughly three and a half billion years—are fundamental to the evolution of all life on Earth; they are the 'creators' of humankind. The opening scene of *Prometheus* reinforces this theory explicitly by defining segments of Engineerian DNA as the catalyst for abiogenesis. All things considered, this scene is a relatively accurate fictionalization of life's ascent from simple organic compounds.

Genes suffice as supernatural, secondly, because the most successful of them are immortal. Theoretically, a highly favorable gene—say, one necessary to humans having a heart—will 'live,' in the form of identical copies passed from parent to child, as long as the population of organisms it supports. It will be selected for and passed down to every

generation of offspring, barring mutation. *Splice* and *Prometheus* realize the immortality of genes, onscreen, as the genetic endurance of the formidable transgenic organisms afoot. At the climax of *Splice*, male-Dren impregnates Elsa, passing on his genes via sexual reproduction. *Prometheus*, with its erratic reach, is a melting pot of genetic kinship and fluid roles therein. Primarily, Engineers being genetically identical to *Homo sapiens sapiens* (the modern human) equates creation and creator, Man and God. This element blurs what has classically separated the two: a supernatural hierarchy.

Though the human good guys in *Splice* and *Prometheus* have both small and significant victories against their respective bio-nemeses, aberrant genomes ultimately persist. Shaw prevents the Engineers from delivering the bioweapon to Earth, but the latter two splice together to yield the predecessor of the *Alien* saga's eponymous Xenomorph (a truly tenacious genome). The apparent immortality of regrettable creations run amok is a salient example of our genetic imaginary's more anxious components.

Meeting Makers Miscommunicating

All worlds collide when David, Shaw, and Weyland congregate to resuscitate the lone Engineer from stasis. Weyland—with David as interpreter—intends to glean a means to immortality from the preternatural giant, whom he is aware created humankind. Upon composing himself, the Engineer genuflects before the team, at which point the scene echoes Shaw and Holloway's discovery in Scotland. His posture renders a reoriented graphic match with the "worshipping" cave paintings. Shaw assumed humankind to be the lower beings in the recurring depiction, with the "giant beings" decidedly superior. In this pivotal scene, however, the preternatural giant establishes

himself as the analog of the lower beings in the artifact; alternately speaking, the Engineer's action 'elevates' humankind to the role of the giant being. The graphic match equates human and Engineer, throwing into disarray the structure of relative deference that had been orienting the crew's perception of their theistic cosmos. The indecipherable "invitation" becomes the film's motif for miscommunication (semiotic incompatibility?) between cosmic tiers: creator and created.

The diegesis of *Prometheus* hosts similar issues with spoken language as that of *Splice*. Though humankind succeeds at interacting with an Engineer, communication is ultimately indirect and ineffectual. (David speaks and the Engineer seems to understand, but we are without subtitles or a reply.) The two communicate, but without a mutually intelligible language. Ironically, a prehistoric pictograph proves to be the most concise piece of information, though even that is inverted in the climactic confrontation. *Prometheus* is a particularly salient testimony to how unwieldy, preexisting linguistic constructs can be when confronted by our genetic imaginary. This scene highlights the genetic imaginary question of how, and what happens when, deities are deposed by science, and the resulting commotion is the film's extrapolation of precisely the same anxiety—the usurping of theism—as it might transpire in the real world.

The gene's ability to fill the same roles as historical deities—Immortal and Creator—is not what generates its ability to rival gods, though. Its unpretentious advantage lies in the fact that the gene *exists*. Consider one step further (to pursue here a genetic imaginary curiosity) that as humans become better equipped to harness the powers of these godlike genes, there will become less and less to distinguish humans from classical deities. The Engineer meets his demise, doing battle with Shaw—his own

creation. In theory, our genetic imaginary enables the same fate for the creator deities of modern-day religions.

This is a thrilling prospect, to say the least. This real-world concern with deicide-by-genes plays out in Prometheus, via Shaw's personal dilemma: the creator of humankind (her god) is discovered to be biologically composed of nothing that humans are not; God is no more supernatural than his creations. Prometheus thusly concludes with Shaw facing a spiritual impasse identical to the predicament of inflexible real-world theists made aware of the godlike traits of genes. Shaw's response to this revelation is an unequivocal rededication to faith-based pursuit of a theistic ideal: "[In] the year of Our Lord, 2094…I am still searching." This insistence, defiant of all evidence, upon the endurance of a theistic deity is a cumbersome cultural discourse to illustrate, which explains in part why its expression in Prometheus is so awkward. The quasi-philosophical sci-fi opus makes no qualms about exploring a theistic fiction, immediately subsequent to its having been empirically invalidated.

Conclusion

The preceding film analyses identify manifestations of the genetic imaginary throughout two similar sci-fi films produced near the end of the millennium's first decade. I situate these instances as culturally motivated based on their temporal loci, at the end a thirty-odd-year timeline characterized by both publication and progressive legislation regarding gene-centric bioengineering. In so doing, I borrow from Jackie Stacey's parametric methodology in *The Cinematic Life of the Gene*, wherein she defines the *decade of the clone* according to nine years' worth of milestone advances in cloning science. Advancing Stacey's model, I draw a pivotal distinction between circulation via hard copy media and mass dissemination of the same via digital 'pocket platform' memes.

I distinguish the iconic DNA double helix as the memetic component that enabled gene-centric discourse to permeate digital graphical media and, subsequently, popular cultural discourse in tech-savvy circles. Deference to basic memetic theory confirms how the advent of massively capable smartphone devices was a second, catalyzing prerequisite for this process. In effect, the cultural climate I observe is a synthesis of this mutual correlation. With the double helix icon a perpetually floating signifier in the vast majority of contexts, interpreting its implementation in sci-fi films is dependent on consideration of the motifs that consistently accompany it. Based on interpretation of these recurring devices as ideologically cohesive, I explicate how recent sci-fi narratives of cloning and creation demonstrate a neo-Darwinian gene-centrism.

The socio-intellectual climate that I argue as generative of this conceptual filmic quality stabilized circa 2007 (concurrent with production of *Splice*), with the last of a three-part confluence of conditions that would ultimately come to bear on populist cultural discourse: gene-centrism pervading digital graphical media and—subsequently—popular discourse, and the advent of massively capable graphics- and icon-based smartphone devices. Genetic imaginary discourse, indulging effortlessly through this succession of increasing capacities for dissemination of popular information, saturated populist cultural discourse to such an extent that, beginning in the late Aughts, filmmakers began producing films in response. Accordingly, and perhaps inevitably, the resulting movies are intimately in dialogue with the genetic imaginary that inspired them. The results onscreen, while not drastic, have been distinctive, and I focus in this thesis on the most astounding consequence: an unintended augmentation to the guiding mythologies of our science fiction films about seizing the means that will enable us not only to 'play' gods, but rival them.

Frankenstein and Creation, Lately

Splice and *Prometheus* as a two-film sample cannot confirm the instigation of a generic cycle. Nor will films released after the completion of this thesis necessarily determine its validity. All signs point to the above examined films as being divergent within their milieu, in accordance with a particular paradigm of modern knowledge and the cultural discourse surrounding it. The films that follow will, rather, be responsible for

indicating the duration of the configuration of the genetic imaginary that is generative of films adhering to the same model as *Splice* and *Prometheus*, as explored herein.

No major cloning films have appeared on the horizon since the initial undertaking of this project. Just as insightful, however, have been the releases of two distinctly Frankensteinian films: Richard Raaphorst's *Frankenstein's Army* (2013) and Stuart Beattie's *I, Frankenstein* (2014). These two texts do not speak directly to the claims of this thesis regarding films featuring transgenic cloning, yet they remain noteworthy for obvious reasons. These films resist the Promethean script that I observe, doing far more to reinscribe the parameters of the Frankenstein legend than to evoke its recent gene-centric descendants.

Frankenstein's Army is World War II-era, survival horror found footage. A Russian battalion lost in mysterious, labyrinthine enemy territory faces down corner after corner of grotesquely amalgamated man-machine Nazi soldiers. Not surprisingly, the film is all Frankenstein. *I, Frankenstein*, is similarly faithful to its titular myth. Aaron Eckhart roams the earth as Frankenstein's monster, some two hundred years after his creation, fighting off demons to save humankind. Again: a film all Frankenstein; the narrative expands on Shelley's, though update nor deviates from the original. In the prologue montage, the creature explicitly invokes the backstory of how he was "stitched, jolted, bludgeoned to life," effectively recalling the novel.[37] Furthermore, Twentieth Century Fox has slated a film entitled *Frankenstein* for release in 2015, and this author sees little reason to expect significant deviations from the classical script in this third recent Frankenstein flick. *Frankenstein's Army* and *I, Frankenstein* suggest that Shelley's

[37] *I, Frankenstein*, directed by Stuart Beattie, featuring Aaron Eckhart (Lakeshore Entertainment, 2014).

classic novel and myth resist updating, in at least one key respect: creation is macroscopically piecewise any time the Doctor's name is invoked. So while I observe the nascent development of markedly gene-centric, Promethean—rather than Frankensteinian—sci-fi narratives of creation, this trend is by no means at the expense of the *Frankenstein* script.

Transcending Sci-Fi: *The Tree of Life* and *Noah*

Deserving of brief mention here are two films that (alternative to the narratives of creation explored herein) attempt to *conflate* modern gene-centric philosophies with Creationist sensibilities—by obviously favoring neither ideology: Terrence Malick's *The Tree of Life* (2011) and Darren Aronofsky's release from March of this year, *Noah* (2014). Though neither film would be readily classed a science fiction, I do not hesitate to say that they are texts comparably important to *Splice* and *Prometheus* in terms of displaying gene-centrism's reshaping of the foundational narrative-myths central to humankind's historical perception of its identity in the cosmos.

To be clear, scholarship on the 'spiritual' aesthetic and affect of *Tree of Life* is extraneous here, but the film's ethereal documentary-style montage sequences—depicting all a budding cosmos, biogenesis, and the prehistoric evolution of complex organisms on Earth—are ruthless administrators of creation-myth contemplation. The 'Evolution' thread of *Tree*'s continual montage, for example, can ultimately be said to either conflate Evolution and Creation, or blatantly feign ignorance of any distinction to be made there between. Just three years its successor, *Noah* employs conceptually identical scenes. Most memorable is a lap-dissolve sequence, framed so as to shadow,

over-shoulder, an iconic tetrapod evolution: from fish (reptile) to amphibian to quadrupedal land mammal. This contradiction of blatant Creationist assertions in *Noah*, an explicitly Biblical epic, is poignant.

I raise these two films in concluding, to suggest the breadth of gene-centrism's reformulating of the infrastructural—arguably *primal*—cultural narratives pertaining to humankind's cosmic identity. While *Splice* and *Prometheus* represent a subdivision of cloning films which evidence this rewriting, *The Tree of Life* and *Noah* are generic Dramas (with *Noah* being somewhat Action/Adventure inclined). In the realm of cinema, then, at the very least, the effects of genetic imaginary discourse on popular perceptions of biogenesis and evolution have begun to extend beyond the explicitly fantastical (and thereby utilitarian) contexts of science fiction. These two films clearly substitute explicitly religious tenets of Creation with illustrations of gene-centric evolution. A further question, though well beyond the limits of this thesis, is to what extent the meticulous design of such sequences might be strategic on the part of producing entities, aiming to be unoffending to as much of the moviegoing masses as possible.

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